

PROJECT FINAL REPORT



Project title: COMPREHENSIVE APPROACH TO ENHANCE QUALITY & SAFETY OF READY-TO-EAT FRESH PRODUCTS

Project acronym: QUAFETY

Agreement number: 289719

Funding scheme: Collaborative Project targeted to SMEs

Project coordinator: Prof. Giancarlo Colelli (UNIFG)

TABLES AND FIGURES

Table 1. List of QUAFETY partners and contact details.

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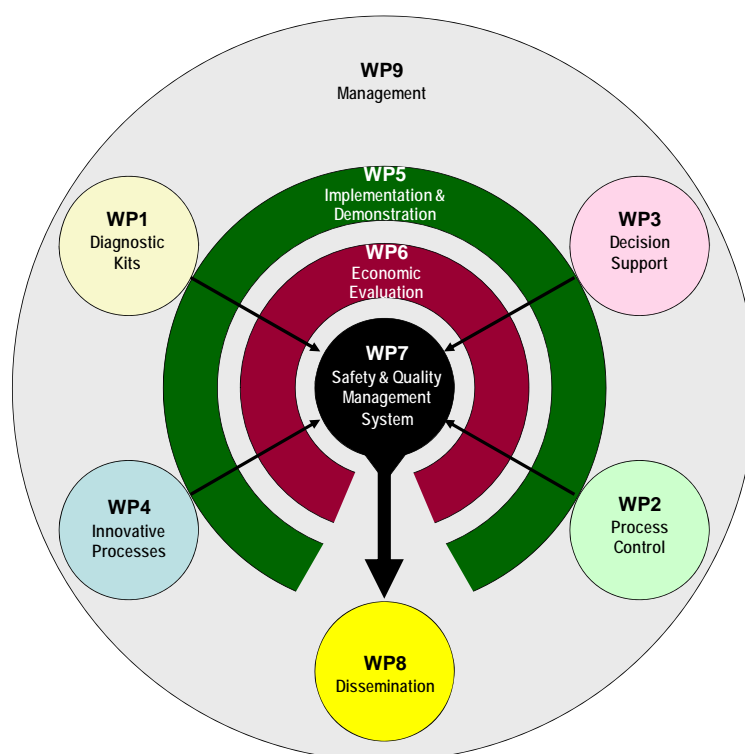


Fig. 1. Work packages conceptual diagram.

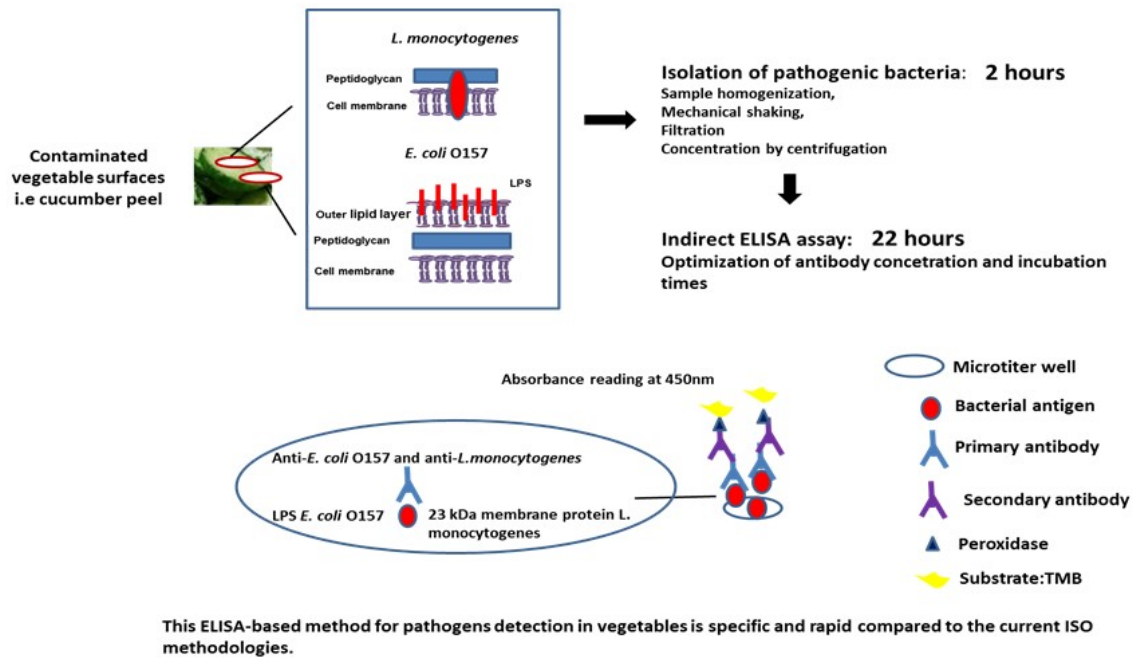


Fig. 2. Scheme of ELISA protocol to detect *L. monocytogenes* in rocket leaves.

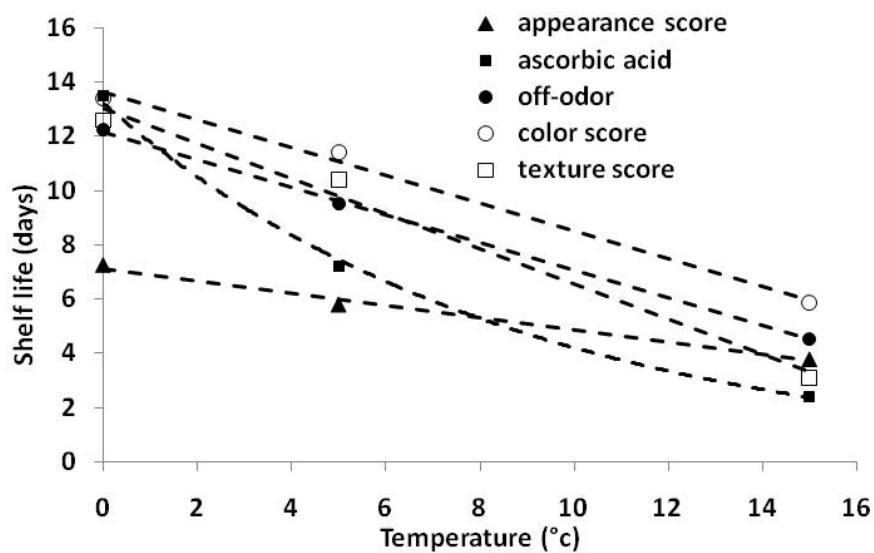


Fig. 3. Estimated shelf life for different quality indices of fresh rocket as a function of the storage temperature. For example in rocket at 15°C, shelf life is limited by ascorbic acid content, followed by texture because the degradation rates of these attributes is faster than appearance and off-odor.

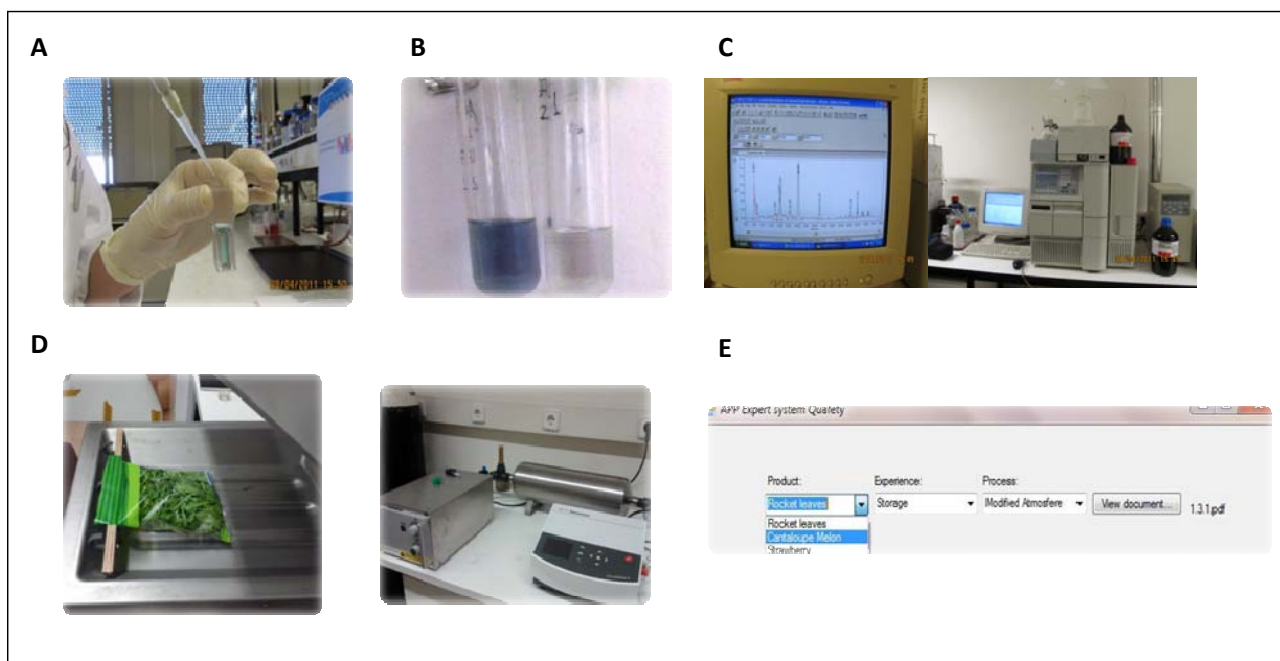
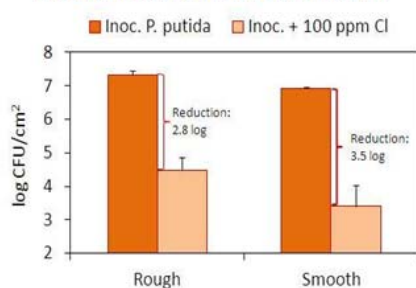


Fig. 4. Analytical techniques and storage conditions: (A) Antioxidant activity (ABTS), (B) total phenolic (Folin-Ciocalteu) and (C) specific chemical compounds (HPLC-DAD) (D) modified atmosphere application, (E) App Expert System Quafety.

Effect of rind properties on the efficacy of melon surface decontamination



The Sorbeto melons

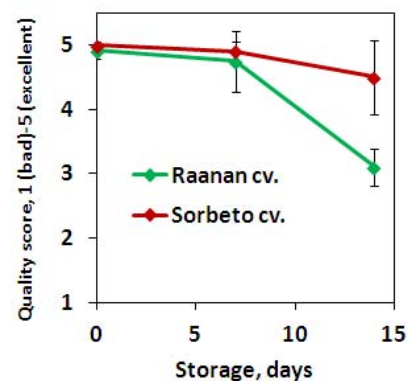


Fig. 5. Effect of rind roughness on decontamination efficacy; The appearance of Sorbeto melons; Quality preservation of fresh-cut Sorbeto melons.

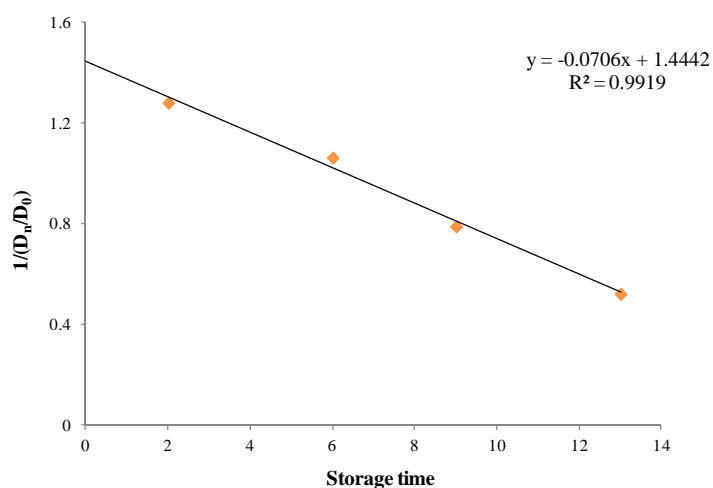


Fig. 6. Goodness of fitting of catechin second order kinetics.

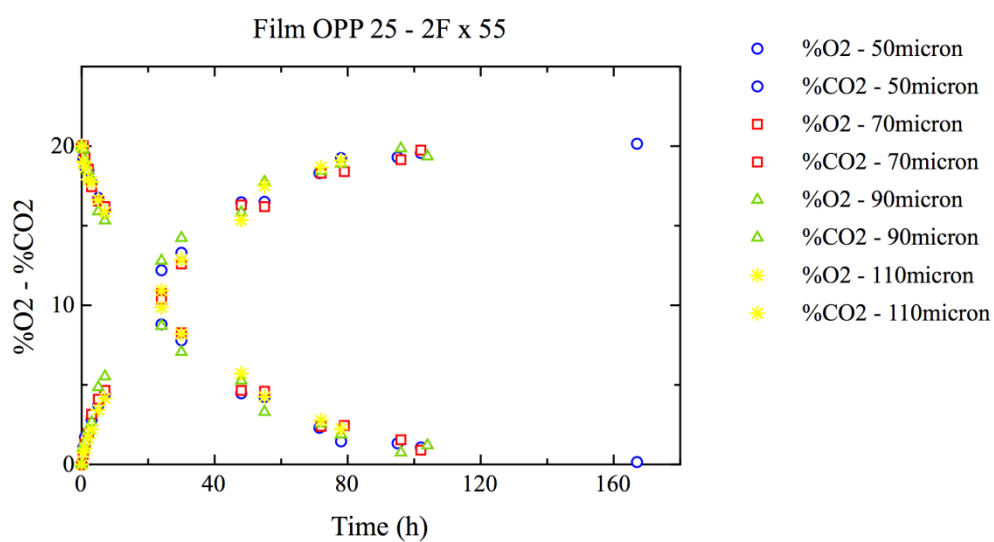
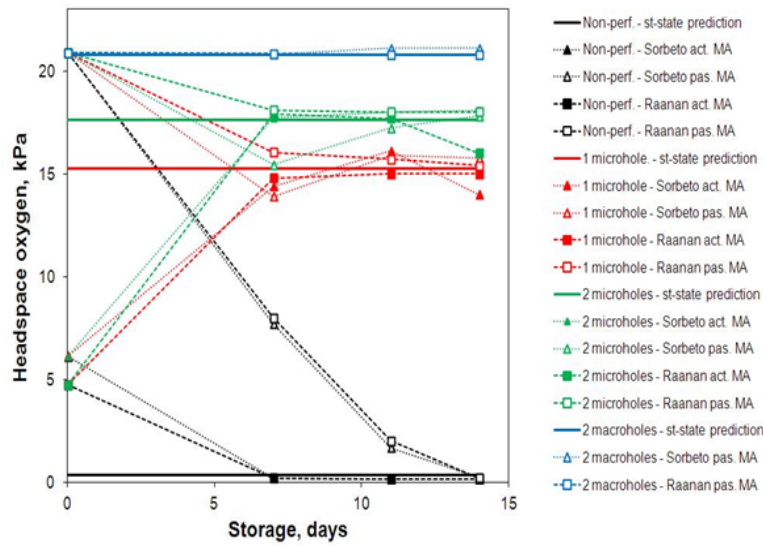


Fig. 7. Headspace gas composition in micro-perforated films.



Effect of MA on the quality of fresh-cut Raanan melons after 2 weeks of storage at 7°C



No MA

Optimal
MA

Fig. 8. Comparison of measured O_2 levels with model predictions in active and passive MA packages of Sorbeto and Raanan melons (left); effect of MA on the quality of fresh-cut Raanan melons after 2 weeks of storage at 7°C (right).

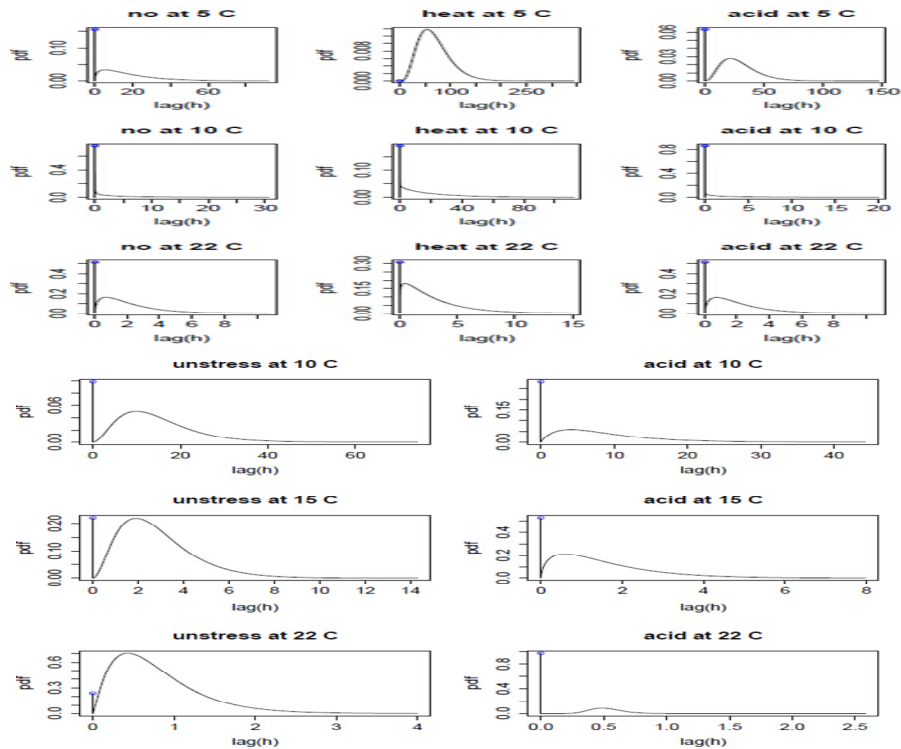


Fig. 9. Distribution of individual lag times *Listeria monocytogenes* and *Escherichia coli* in various conditions.

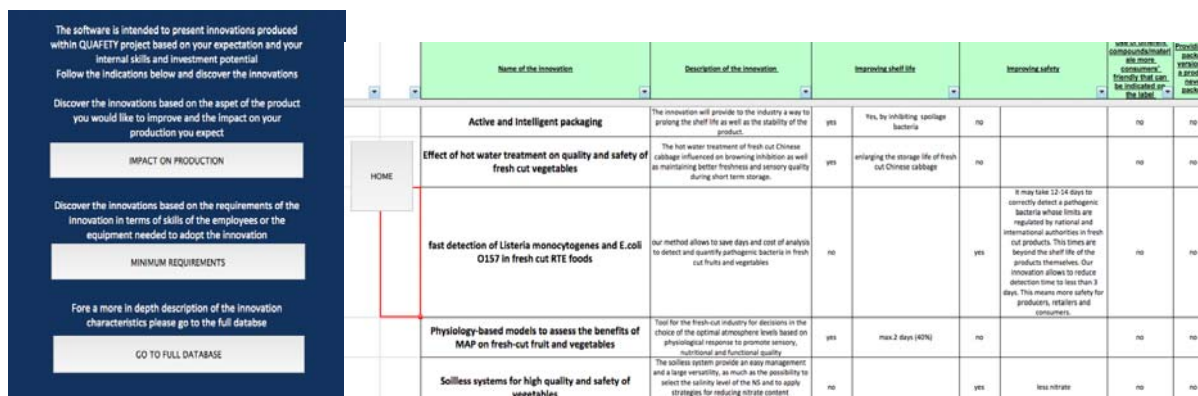


Fig. 10. Decisional tool – software.

Soilless system, salinity of nutrient solution and nitrate abatement strategy on yield and quality of some leafy species

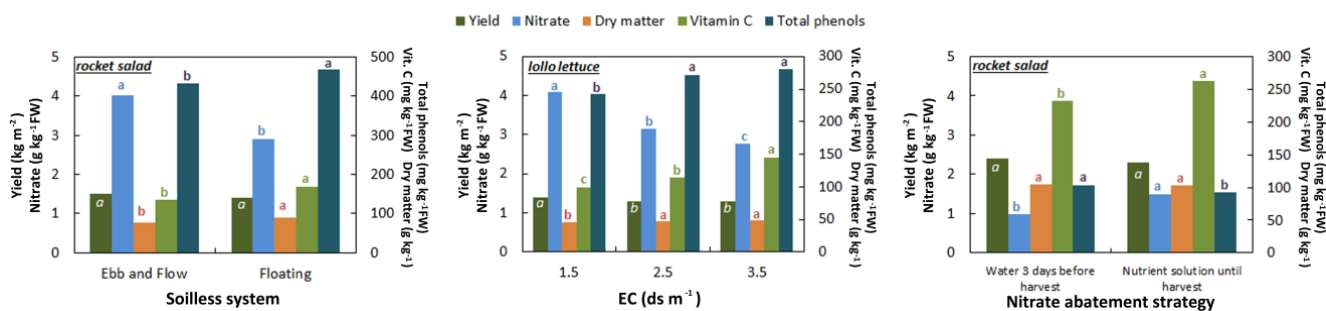


Fig. 11. Optimal nutrient solution management improves quality and safety of soilless-grown lettuce, endive, escarole and rocket.

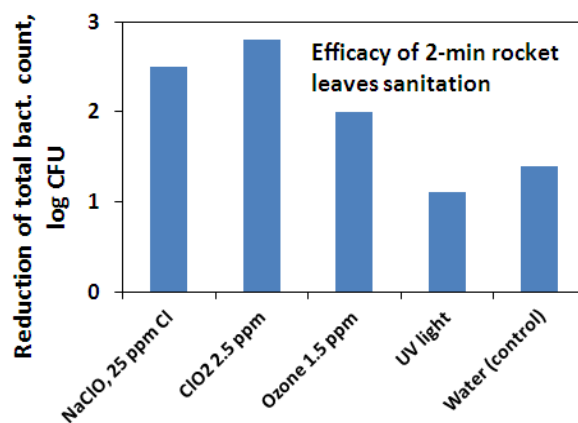


Fig. 12. Ultrafiltration and ClO₂ substitute chlorine for water sanitation at fresh-cut plant.

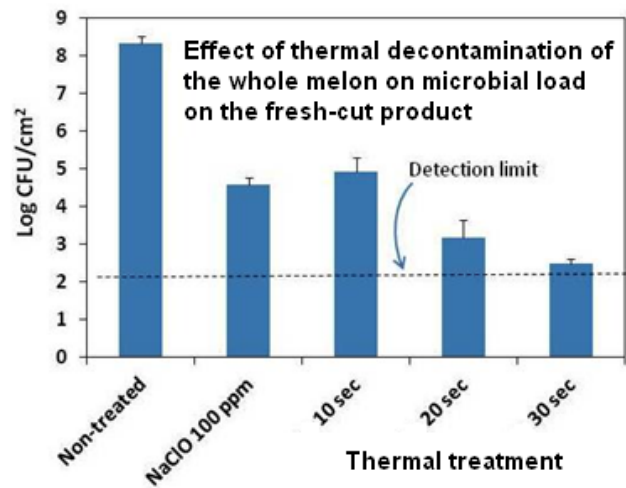


Fig. 13. Thermal rind decontamination reduces microbial load on RTE melon by 4.5-6 log without heat damage.

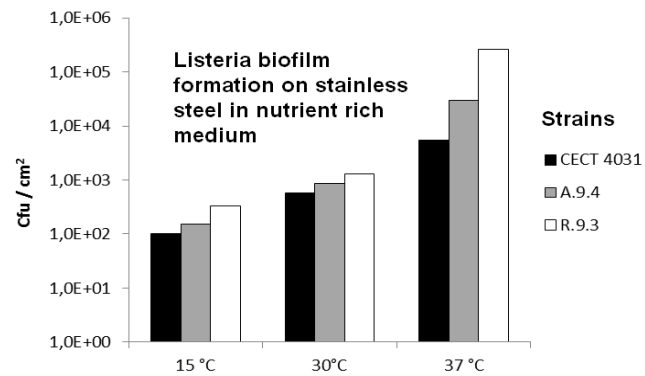


Fig. 14. *Listeria* biofilm formation rates on stainless steel.

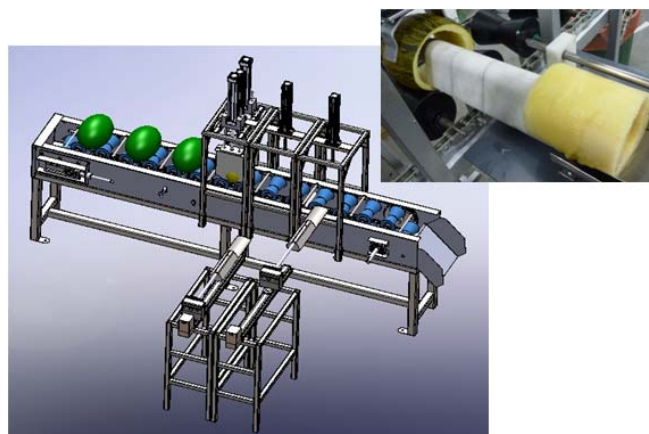


Fig. 15. Automatic machine for hands-off fresh-cut melon processing.



Fig. 16. Effect of hot water to preserve colour of shredded Chinese cabbage and rocket salad.

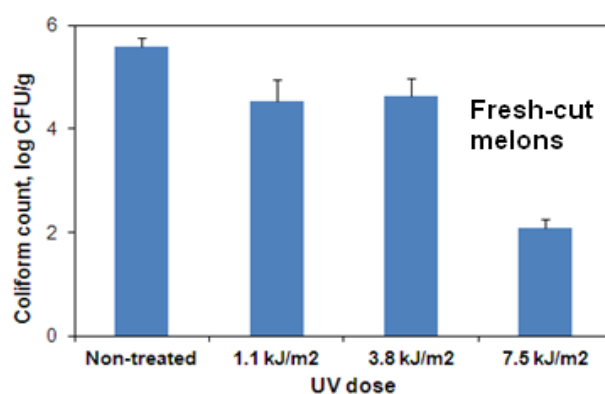


Fig. 17. Effect of UV on microbial counts of fresh-cut melons.

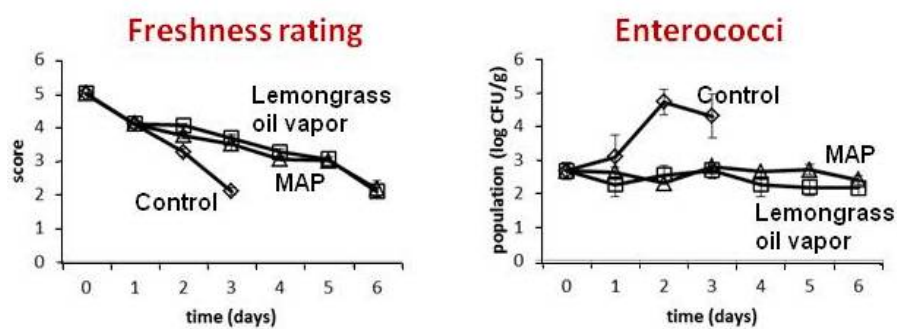


Fig. 18. Effect of lemongrass oil vapor and MAP on enterococci, yeast and moulds of rocket leaves.

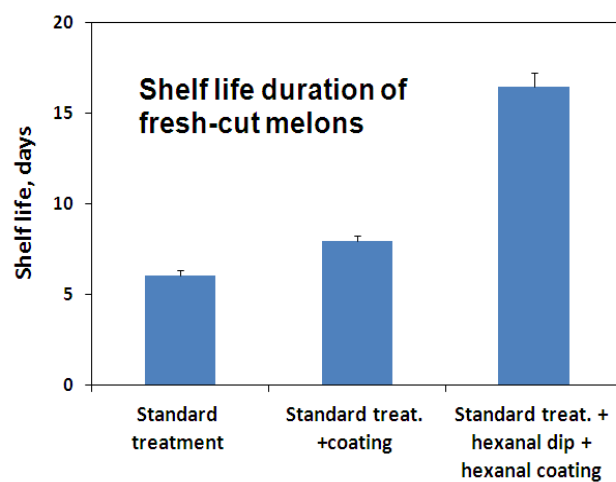


Fig. 19. Effect of hexanal application as dip and in coating on shelf-life life of RTE melon.

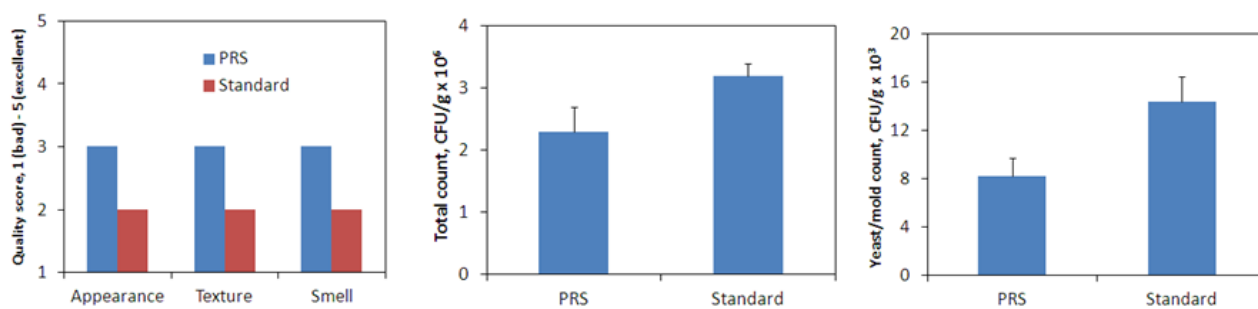


Fig. 20. Effect of the use of passive-refrigeration containers (PRS) on quality of leafy greens during the cold chain.

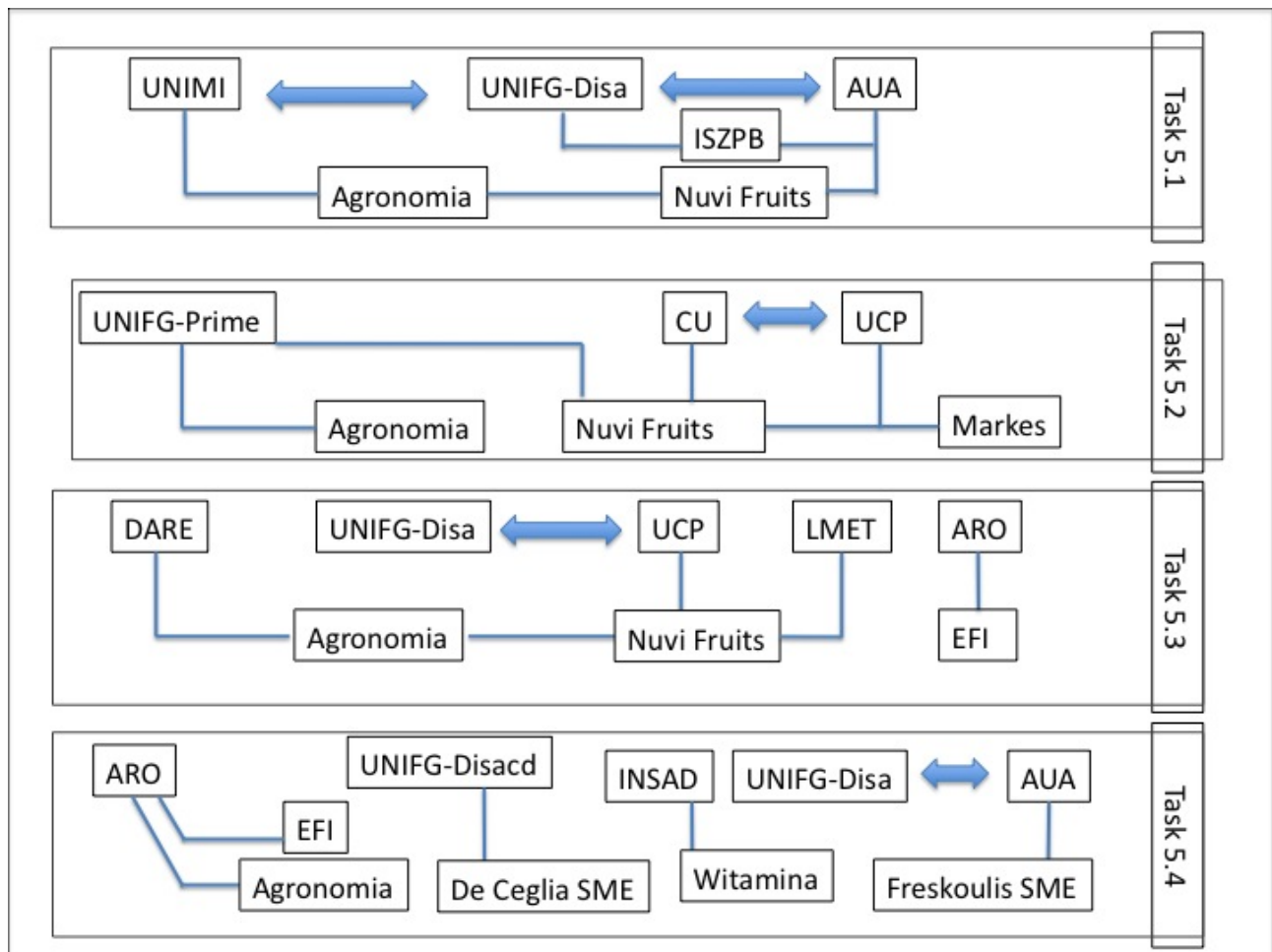


Fig. 21. Interactions among partners of QUAFACTY and between partners and other SME.



Fig. 22. Example of concepts; consumers do not positively appreciate all product innovations. Shelf-life enhancements lead to negative perception of “fresh” cut products. However, natural antimicrobials, inert gases, packaging/labels informing about food-safety, as well as the use of quality indicators on the label could effectively lead to price gains because of strong consumers’ consensus.

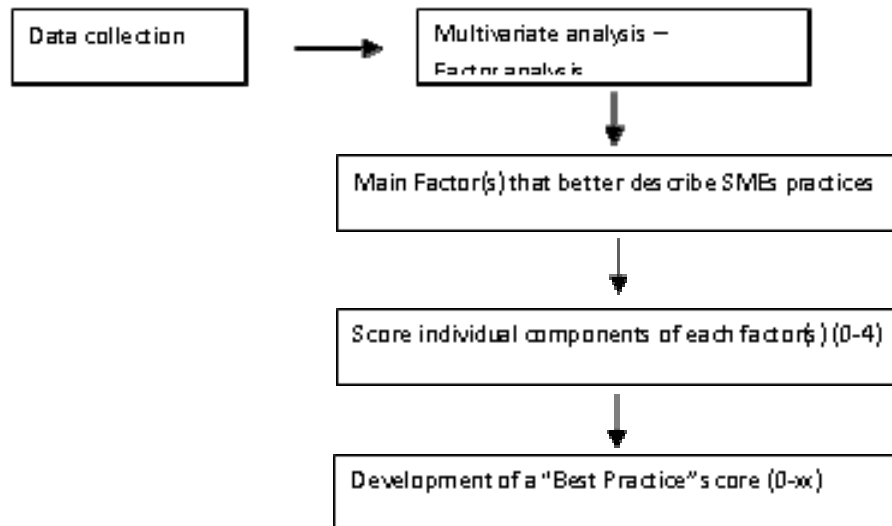


Fig. 24. Best Practice Score based on multivariate analysis of questionnaires.

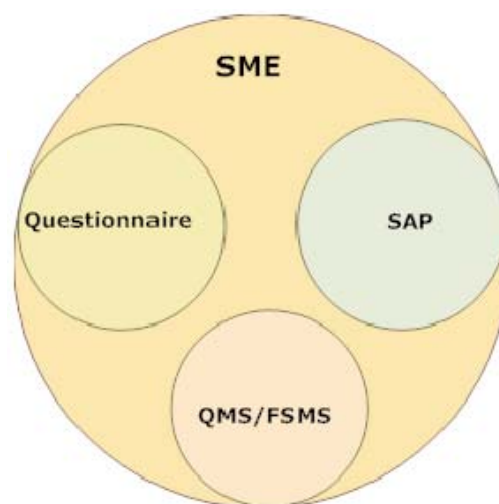


Fig. 25. Conceptual diagram of activities carried out in WP7 (SME: Small and Medium Enterprise; SAP: Safety Assessment Plan; QMS/FSMS: Quality Management System/Food Safety Management System).

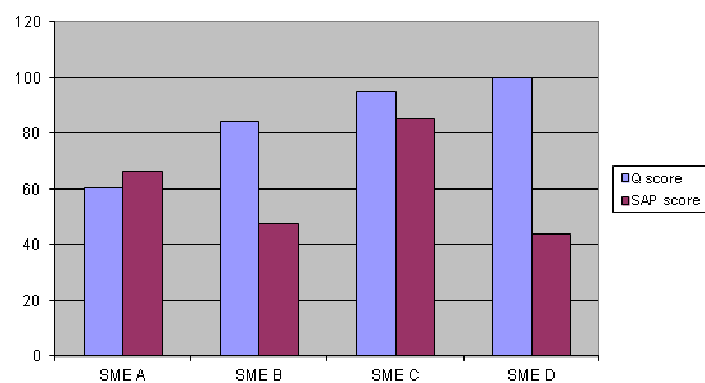


Fig. 26. Assessment of the QMS/FSMS of the participating industrial partners (scale: 0 – 100). Q score: the score obtained from the questionnaire; SAP score: the score obtained from the Microbial interpretation of SAP microbiological results.



Fig. 27. The Project QUA FETY logo.



Figure 28. Locations in Europe visited by QUAFACTY scientists for dissemination activities.



Figure 29. Locations outside Europe visited by QUAFACTY scientists for dissemination activities.

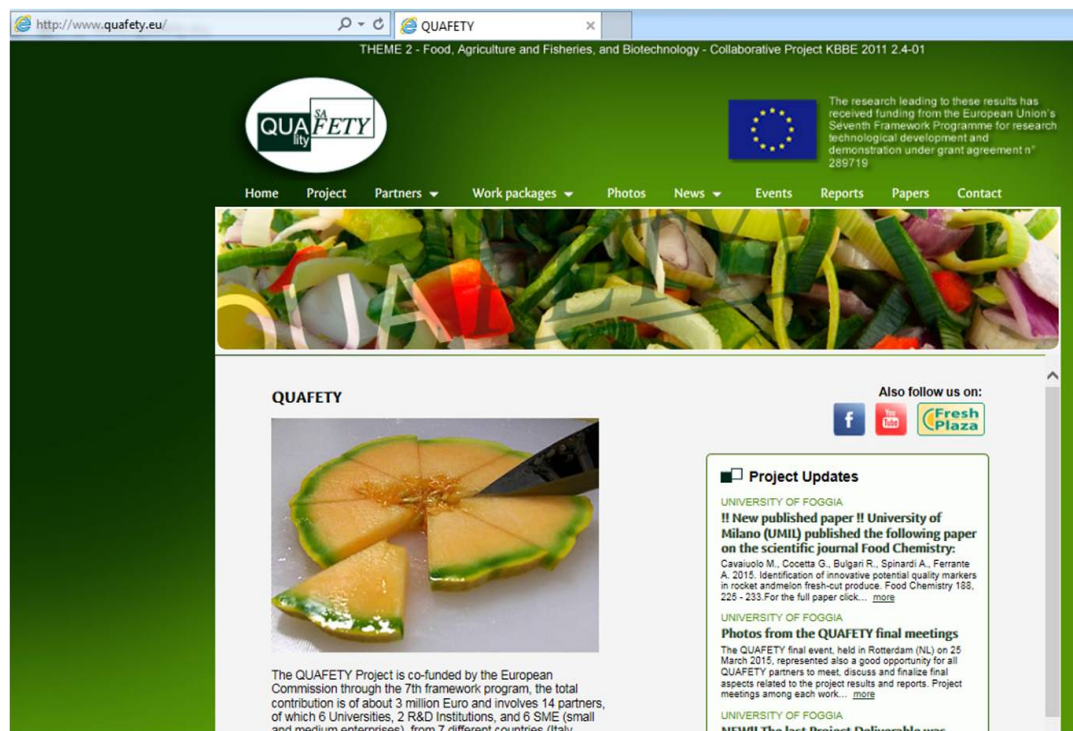


Figure 30. Screenshot of quafety.eu website.